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HISTORY AND PURPOSE

During the 1960's, organized athletics enjoyed a popularity that was unmatched during times. Large crowds gathered to watch athletic contests, greater exposure was provided in the media and more young athletes became involved. Many of these young athletes were encouraged to perform more aggressively to obtain an athletic scholarship or lucrative profession after college.

Unfortunately, with the increased attention and involvement, serious injuries also became prevalent. This was particularly evident in the sport of football where there were 32 fatalities in 1968 directly due to participation in the sport in organized competition, plus four in school football.

To counter this trend, the National Operating Committee on Standards in Athletic Equipment (NOCSAE) was formed in 1969 to commission research directed toward injury reduction. Priorities had to be established because of limited funds, and research was directed where the most urgent need for a standard. Therefore, football helmets were targeted for the initial research effort.

Deterrents to Injury Reduction in Football

Several problems confronted NOCSAE in its attempt to reduce football injuries. One problem in reducing injuries in football was the increased use of the head as the initial contact in blocking and tackling. It was the concern of NOCSAE that any improvement in equipment might lead to more and harder hits in that area.

The problem was how to protect a large, fast football player who might possess kinetic energy approaching 3,000 foot pounds and to provide such an athlete with equipment that would be protective and comfortable.

Researchers were also aware that despite the occasional peaks, such as in 1968, the incidence of head injury fatalities had been averaging less than two per 100,000 athletes. It was possible that the degree of protection had adjusted to the game and any radical changes would increase the incidence of injury.

In addition to the above reasons, there were many unknown and uncontrollable factors in head injuries, i.e., the incidence of cerebrovascular disease death rate in the 15 to 23 year old males was between 0.8 and 2.0 per 100,000. There was every likelihood that many athletes with low tolerance for impact had participated in football undetected and were

The NOCSAE Football Helmet Standard

The work of establishing a football helmet standard began in 1970. A test system was developed featuring a humanoid head instrumented to determine the degree of hazard experienced by the model relative to a concussion criterion in a severe football impact simulation. The N

Exhibit "D"

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standard was published in 1973. Voluntary changes which have occurred in football as a result of research efforts include shell size changes, substitution of stiffer for softer materials, more space for softer materials, the elimination of models from 85 in 1972 to 25 in 1973, and quality control.

The equipment which was designed for the initial certification tests was installed in manufacturing plants and subsequently, the manufacturers assumed responsibility for certification. In a pioneering effort by one of the largest helmet reconditioners, install drop test equipment in 1975 and subsequent testing found that 84 percent of the used helmets failed the NOCSAE test. The National Athletic Equipment Reconditioner's Association (NAERA) became a member of NOCSAE in 1976 and recognizing its value to the revision of the NOCSAE Football Helmet Standard in 1977 provided for recertification of helmets by reconditioners. This program, along with the NAERA test results, constituted a collection system on helmet performance.

National Collegiate Athletic Association (NCAA) rules mandated the use of certified helmets beginning with the 1978 season, and the National Federation of State High School Associations required them from the beginning of the 1980 season.

Head Injury Reduction

By 1985 a significant downward trend in head injury fatalities was observed leading to 19 deaths during the 1990 season for the first time since the beginning of annual fatality reporting in 1931. Comparing the incidences of head injury fatalities for pre- and post-NOCSAE, which spanned seasons ranging from 1959 through 1990, from the National Federation of State High School records, a 74 percent reduction has occurred. Of even more fundamental importance, the incidence of serious head injuries, the leading cause of disability and death in football, has dropped from an average of 4.25/100,000 players in the 1964-68 era, immediately prior to the formation of NOCSAE, to an average of only 0.51/100,000 players during the 2002-2006 seasons, an 87 percent drop. These results were very gratifying to a group which had confidence that helmet performance maintained to a severe head injury standard would also have a mitigating effect on other types of injuries, such as concussion. This is not to say that helmets were the sole injury reduction factor, as rules changes such as the warning and enforcement against spearing as well as other rules changes have also played a role.

During part of this period of progress and head injury reduction, permanent quadriplegia and neck injuries were averaging 20 annually during the 1971-1975 seasons. Rules makers recognized that the helmet-face mask combination had played a dual role by reducing injuries and lost lives on the one hand and yet inviting use of the head as an offensive weapon on the other. In 1976, rules-making committees were responsible for initiating changes which prohibited initial contact of the head in blocking and tackling. These changes have helped significantly reduce quadriplegic injuries.

Playing the game requires a team effort among players. Continuing to reduce the incidence of head and neck injuries requires a concerted effort among rules makers, coaches, officials, equipment manufacturers, reconditioners and NOCSAE.